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**Review Article**

# Impact of substance abuse among adolescents: a narrative review

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## ABSTRACT

Substance abuse among adolescents are considered as a critical public health issue which leads to impact on individual development and societal well-being. Around 1.5 crore (15 million) minors aged between 10–17 years uses substance in India and 34% used any substances in Tamil Nadu. There are no enough evidences on impact of substance abuse. Hence, this study aimed to explore the various impact of substance abuse among adolescents. The literature search was carried out in Pub-med central, Google scholar and Web of science databases with suitable search terminology like impact of substance abuse, addictions, drug abuse, drug dependence, substance use disorders drug user, drug intoxication, and toxicity. In addition, demographic variables, new innovative policies and programs for substance abuse among adolescents in India were reported in the present review. Understanding the impact of substances among adolescents helpful in development of targeted health policies and community-based programs. It ultimately promotes the healthier lifestyles and also enhances future outcomes among adolescents.

**Keywords:** Substance-abuse, Adolescents, Vulnerable population, Drug abuse, Addiction

## INTRODUCTION

Substance abuse among adolescents are considered as a critical public health issue which leads to long-lasting complications for individual development and societal well-being. World Health Organisation (WHO) defined adolescence as "The age group between from 10 to 19 years". It is a signified period fort physical, mental and social changes. During this vulnerable period, majority of adolescents are experiment with substances like alcohol, tobacco and other psychoactive substances due to their curiosity, peer pressure, family influences and even as a coping strategy for mental and emotional distress.[1]

Adolescents represent a critical segment of the whole population with their size and potential. WHO reported, around 1.2 billion adolescents Globally, whereas in India nearly more than 250 million adolescents which is the largest population in the world which is projected in Table 1.[2] Hence it is important to be acquainted with prevalence rate of substance abuse among adolescent to prevent from the complications.

### *Global prevalence*

The Global Burden of Disease (GBD, 2021) reported that global age-standardized prevalence rate (ASPR) of substance use disorder among adolescents has declined

from 927 per 100,000 in 1990 to 777 in 2021 due to School and Community based education and awareness by global initiatives and WHO and there is slight increase in absolute number of adolescents affected by substances.[6] WHO/Europe - Health Behaviour in School aged Children (HBSC 2021/22) stated that, 57% of children belongs to age around 15 year have tried alcohol and 37% in drank regularly. Regarding tobacco 32% tried, 20% used recently surpassing conventional cigarettes (25% lifetime use, 15% recent). Slight decline in cannabis from 14% in 2018 to 12% in 2022.[7] 14% of girls and 18% of boys (13–15 years) reported alcohol use in low- and middle-income countries and 5% of deaths caused by alcohol among 15–29 -year-old. 1 in 10 girls and 1 in 5 boys aged 13–15 use tobacco in that 50% of them die prematurely and 20% of adolescents reported cannabis use which is the most common illicit drug.[8]

**Table 1: Adolescents population (aged 10 years and above) in India.**

| Region | Age range (years) | Population (approximately) | Sources |
|---|---|---|---|
| **India** | 10-19 | 20% (253 million) | UNICEF 2021[3] |
| **India** | 0-14 | 30.76% (372 million) | Demographics of India (census-based model)[4] |
| | 15-19 | 9.95% (128 million) | |
| **Tamil Nadu** | 5-18 (projected for 2021) | Figure exists but not publicly accessible | NFHS-5 report 2021[5] |
| **Tamil Nadu** | 0-6 (2011) | 10.5% (7.42 million) | NFHS-5 report 2021[5] |

***National prevalence***

A report by Ministry of Social Justice and Empowerment (MSJE) 2019 revealed that nearly 1.5 crore (15 million) minors (between 10–17 years) uses substance. Around 1.7% inhalant users in that 0.58% were adults and 18 lakh young adults need help and 40 lakh people use opioids; 30 lakh use inhalants and 30 lakhs use alcohol National Family Health Survey (NFHS) 2019–21 via understanding the lives of adolescents and young adults (UDAYA) survey reported that currently 1% boys and 0.3% girls were alcohol users among 15-19 years and 6.5% boys and 1% girls were tobacco users.[9] Other substances are cannabis (1.3%), opioids (1.8%), inhalants (1.17%) and inhalant dependence at 0.21% in India.[10] In 2024, Dahiya reports substance abuse among 12–17 years stated that, 12.8% used marijuana, 0.42% cocaine, 0.02% heroin, 0.17% meth-amphetamines and 2.5% misused pain relievers.[11]

***State prevalence***

Jamani et al reported that 34% used substances like, tobacco chewers 18%, drinkers 29%, smokers 30%, and cannabis 12% among adolescents in Vellore Urban Slums.[12] Times of India published survey report on Namakkal district, Tamil Nadu (2025) that around 21% of high school students use tobacco, 76% of them preferred smokeless and initiation of drug began with age group of 13–15 years.[13]

This review is essential to co relate with existing researches, consequences, highlights risk factors, and effective interventions and also evidence-based practices, promoting early intervention and informed policy making to safeguard the adolescence overall health and well-being

## METHODS

The present review used the numerous preferred reports of items. The literature search was carried out in pub-med central, Google scholar and Web of science database with suitable search terminology such as “impact of substance abuse, addictions, drug abuse, drug dependence, substance use disorders drug user, drug intoxication, toxicity, adolescents and withdrawal. In addition, online searches were done for socio-demographic variables and new innovative policies and programs for substance abuse especially adolescents in India. Currently available of 5 years of data from 2020 to 2024 were included. Only English language articles were selected for the review. Original research, systematic review and narrative review were selected for the current review. Substance abuse case reports were excluded.

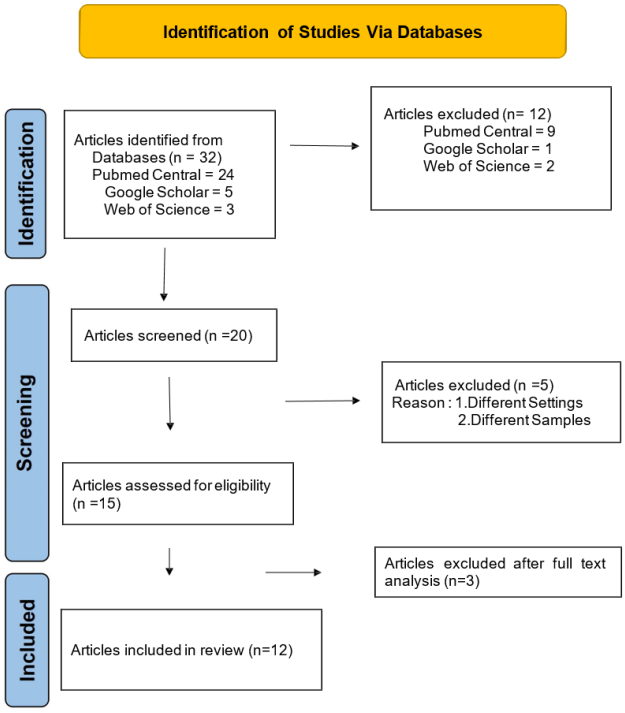


**Figure 1: Study selection process outlined using PRISMA guidelines.**

A total of 24 articles were found in Pub-med central, 5 article were found in Google scholar and 3 article were

found in Web of Science databases. In the first step, initial screening was performed by reading the research title and abstract from the search box which result in 9 articles from Pub-med central, 1 from Google scholar and 2 from Web of Sciences and then excluded. In second step, authors evaluated 20 full text articles and selected 15 articles which meeting the eligibility criteria of the present review. Finally, 12 articles were included for final review which is illustrated in Figure 1. In addition, manual search also carried out to retrieve data regarding adolescents in India and schemes and programs launched by government of India for the wellness of substance abuse people especially adolescents.

The data regarding risk factors for substance abuse, various impacts of substances, vulnerable population, substance abuse statistics among adolescents in India, policies and welfare programs in India, challenges faced and innovations in addressing substance abuse among adolescents were reported in the present review.

## DISCUSSION

### *Impact of substance abuse among adolescents*

Substance abuse among adolescence is a significant health concern with wide-range of effects on individual, family and community. Adolescents are very vulnerable due to ongoing brain development, identity formation, peer pressure and also emotional instability. The use of substances can disrupt the developmental period of adolescence which leads to short-term and long-term consequences. In 2024, multi-centric primary care-based study revealed that across 15 states with 1,630 youngsters with age group 10–24 years.32.8% reported drug use,75% of them initiate drugs before 18 years. Tobacco (26.4%), cannabis (9.5%), alcohol (26.1%). Peer pressure and family history of substance abuse are emerged as key determinants.[14]

A field study conducted by Institute of Psychiatry (2025) about mental distress driving addiction reported that, emotional distress from academic and familial pressure is pushing many adolescents toward substance use and even suicidal ideas. The study urges schools and parents to create emotionally supportive environments and watch for warning signs like isolation, mood swings, and academic decline.[15]

Meisel et al conducted a study on examination of the joint effects of adolescent interpersonal styles and parenting styles on substance use revealed that more or less successful at navigating peer relationships while avoiding substance use behaviors.[16]

### *Risk factors for substance abuse in adolescents*

Sharma et al reported about-determinants of substance use among young people attending primary health centers in India.[17]

*Peer pressure*

Many adolescents were experiment with substances like drugs and alcohol to fit with their peer groups and gain social acceptance.

*Curiosity and risk-taking*

Teen ages are naturally more curious about risks and adventures; hence they are more likely to take risks by consuming substances without concern about the consequences.

*Family environment*

Family plays an important role in substance abuse. Exposure to family members who already uses substances and living in family environment with parental neglect, family dysfunctions and abuses may increase risk.

*Mental health struggles*

Adolescents with mental health issues like trauma, anxiety, depression may increase to drugs intake as a coping mechanism.

*Media influence*

Media is one of the main factors for increasing rate of substance abuse like movies, music and social media can glamorize substances mainly alcohol use.

*Cultural and societal factors*

Some cultural factors influence substance abuse like social media, lack of mental health access, weak enforcement of drug policies and poverty. In some societies, substance abuse is considered as a taboo.

### *Impacts of substance abuse*

Jain et al reported impact of alcohol and substance abuse on adolescent brain: a Preclinical perspective revealed various impacts on adolescents especially brain development.[18]

*Health effects*

*Physical health*

Substance use cause harm to the developing brain and body. It can lead to cardiovascular issues, liver failure, weakened immune system etc. In some cases, it leads to fatal overdoses of drugs.

*Mental health*

Substances can increase the risk of developing mental disorders among adolescents such as anxiety, depression, schizophrenia and suicidal ideas.

*Addiction*

Adolescents are more vulnerable to addiction due to brain immaturity. Early substance use during adolescents majorly increases the likelihood of long-term dependency.

*Injury and accidents*

Substances cause impaired judgment and coordination leads to higher risk of accidents like car crashes.

Nigeria et al discussed about impact of substance abuse on academic performance among adolescent students of Colleges of Education in Kwara State.[19]

*Academic consequences*

*Poor academic performance*

Substance-abuse causes decreased concentration, lower motivation and memory problems. It often results in lower grades.

*Truancy and dropout*

Initially drugs cause ***i***ncreased absenteeism and disengagement leads to school dropout and limiting future opportunities in future.

*Disciplinary issues*

Substances cause increased likelihood of school suspensions and expulsions due to existing behavioral problems among adolescents. Mohamad et al highlighted the impact of life satisfaction on substance abuse: delinquency as a mediator and reported various legal and societal consequences including the risk of addiction among adolescents.[20]

***Social and behavioral issues***

*Family conflict*

Substance abuse adolescents are more prone to isolate themselves from family members which leads to strained relationships with parents, sibling and guardians.

*Peer problems*

Severity of drug abuse may increase due to delinquent peer pressure which results in aggression, misunderstanding and emotional instability. It may lead to sell drugs, steal, commit other crimes.

*Violence and criminal behaviour*

Drugs among teen age are higher risk of engaging in criminal behaviour like assault, theft or other illegal activities.

***Legal and societal consequences***

*Criminal records*

Substances can influence on law which impact on future employment and educational opportunities.

*Stigma and discrimination*

Social-labeling of substance abuser can lead to reduced self-esteem and social isolation.

*Economic burden*

Substance abuse may increase economic crisis among families and communities due to de-addiction treatment costs and legal fees.

***Risk of addiction***

*Dependence*

Adolescents who start using drugs early developmental stage are more likely to develop drug dependence.

*Cycle of abuse*

Without regular intervention can escalate into chronic drug addiction.

***Vulnerable subgroups for substance abuse***

Following are the vulnerable subgroups under the higher risk for drug usage due to their combination of biological, psychological, environmental and social factors.

*Adolescents*

They are particularly vulnerable for substances due to developmental process, risk-taking behaviour and peer pressure. Early initiation of drugs is associated with developing substance use disorders in future. Adolescents may model the substance abuse as a coping technique from the family environment.

*People with mental disorders*

Individual with mental disorders such as anxiety, depression and schizophrenia are more likely to have drugs as a form of self-relaxation and managements.

*Lesbian, gay, bisexual, transgender, and queer or questioning individuals (LGBTQ)*

This type of people faces stigma, discrimination even rejection from the family members and communities due to increasing their vulnerability. Higher morbidity rate of substance uses and mental disorders are documented among LGBTQ+ populations.[21]

*People experiencing homelessness*

Homeless people often experiencing chronic stress, lack of access to healthcare and trauma increasing risk of substance use. Simultaneously drugs may also contribute to homelessness.[22]

*Adolescents involved in criminal justice system*

A higher rate of incarcerated adolescent has present history of various substance abuse. Post-incarceration periods can pose a higher incidence for relapse and overdose.

*Family history of substance abuse*

Significant increases more risk of substance use disorders due to their genetic and environmental factors. Around 40–60% due to genetic preposition and other factors like poor supervision, and learned behaviours.[23]

***Various policies and welfare programs in India***

Various policies and welfare programs in India comprises of three pronged strategies- supply reduction, demand reduction and harm reduction which is depicted in Table 2.[24-26]

**Table 2: Policies and welfare programs in India.[24-26]**

| Categories | Framework | Concepts |
|---|---|---|
| **Supply reduction** | NDPS ACT 1985 (Narcotic Drugs and Psychotropic Substances Act) | It is an India's central law against drug manufacture, cultivation, distribution and consumption with amendments in 1988, 2001, 2014 and 2021. The amendment of 2014 is expanded provisions for medical usages such as essential narcotic drugs and recognized intervention of drug dependence. A 2021 proposal mainly aims to decriminalize the possession of small quantities of drugs for personal use and focusing on rehabilitation rather than punishment. |
| **Supplementary laws** | Drugs and Cosmetics Act (1940) and Drugs Control Act (1950 | It aims to regulate the medical and pharmaceutical drugs and ensure drug safety and price control. |
| **Rights-Based Mental Health and Disability Acts** | Mental Healthcare Act (2017) | It contains substance use disorders as mental disorder, non-discrimination, ensuring right and human treatment. |
| | Rights of Persons with Disabilities Act (2016) | It allows certification for person with SUDs, promoting integration and rights |
| **Regulatory bodies** | Narcotics Control Bureau (NCB) | It leads anti-trafficking efforts under NDPS |
| | National Investigation Agency (NIA), Customs and Directorate of Revenue Intelligence | It forms an enforcement network for substance use |
| **Demand reduction** | National Action Plan for Drug Demand Reduction (NAPDDR) | Since 2018, It was implemented by the Ministry of Social Justice and Empowerment for integrating earlier schemes. It established Integrated Rehabilitation Centres (IRCAs), outreach centers, peer-led interventions, District De-Addiction Centres (DDACs) and Addiction Treatment Facilities (ATFs) |
| **Harm reduction** | Opioid substitution therapy (OST) and needle exchange | OST was launched in 2005 and supported by NACO, NDDTC-AIIMS in states like Punjab. As of 2023, 393 opioid substitution centers opened to serve around 44,553 people (nearly 23% of around 190,000 PWIDs). |
| | Navchetna: A life skills resource for adolescents | It was launched by National Institute of Social Defense (NISD). Target group is school-going adolescents (13–19 years). It mainly focuses on life skills education for adolescents to prevent drug use and promote their emotional resilience. Main features are curriculum-based training for teachers and students, modules on resisting peer pressure, mental health awareness, and healthy decision-making. |
| | Nasha Mukt Bharat Abhiyaan (NMBA) | It was launched in 2020 with objective of make 272 identified districts substance-free through community participation. It implements some adolescent-specific activities like school-based outreach programs, youth clubs and parent awareness sessions, use of various digital media platforms and influence to engage teen agers and counselling to drug user and raise helpline support. |

Continued.

| Categories | Framework | Concepts |
|---|---|---|
| | Childline 1098 | A 24×7 helpline available for children in distress and those affected by drug abuse. It offers rescue team, counseling support and referral facilities through NGOs and child care protection units. |
| | Mental Health Programs under National Health Mission | It was District Mental Health Programme (DMHP). It provides services for adolescents suffering with mental health issues and addiction through district hospitals and schools. |

***Challenges faced by the adolescents with substance abuse***

Adolescents with substance abuse are struggling with numerous-challenges. It can significantly influence on their development and long-term well-being like mental disorders (depression and anxiety), academic decline, strained family relationships and increased involvement in risky behaviors like-criminal activities or unsafe sex.[27]

***Innovations in addressing substance abuse***

There is overview of innovations in the field of drug abuse management and prevention mainly relevant to adolescents.[28]

*Digital interventions and mobile apps*

Web-based platforms (such as ReSet-O and Woebot) and mobile applications are uses to offer cognitive behavioral therapy (CBT). Here AI is helping the drug users to manage their cravings and track recovery. These are useful for tech-savvy adolescents especially and also providing 24/7 access to support.

*School-based life skills programs*

Some programs like unplugged (supported by WHO) and India's Navchetna uses interactive techniques and skill-building methods to teach teens for effective resistance to peer pressure and decision-making. It shows evidence in reducing onset of drug use among adolescent.

*Neuro-feedback and brain-based therapies*

Some medical techniques like EEG and neuro-feedback are being used to enhance self-regulation and impulse control among substance-dependent adolescents. These therapies are non-invasive and aim to improve brain function without medication.

*Community-based peer pressure interventions*

Peer-led interventions and recovery models about drug abuse are gaining popularity especially in urban slums and tribal areas in India. Adolescents are trained to handle their peer pressure positively and also enhancing credibility and effectiveness.

*AI and predictive analytics for early detection*

AI tools are being created to analyze behavior patterns of the individual on social media and school. These records are used to identify the-risk adolescents' early stages. It implemented specific preventive interventions before substance use escalates among adolescent.

## CONCLUSION

Substance abuse among adolescents had significant and far-reaching impact among them. It disrupts their physical, mental and well-being and academic performance. Later it hinders brain development, increases risky behaviors which leads to long-term drug addiction and psychological issues. Through the early intervention, prompt education and enhanced strong support systems can ensure healthier future among adolescents.

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